



Handwritten: Patent at Special!
S. Zimmermann

Docket No. 1419.1060

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re Application of

Confirmation No.: 9431

Yoshinobu KANEKO, et al.

Serial No.: 10/056,0790

Group Art Unit: 3712

Filed: January 28, 2002

Examiner: Unassigned

For: STEERING DEVICE FOR TOY AND RUNNING TOY

PETITION TO MAKE SPECIAL

Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

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JUL 11 2003
TECHNOLOGY CENTER R3700

Sir:

The Applicants respectfully request that the above-identified application be advanced out of turn for examination in accordance with 37 C.F.R. §1.102(d) and MPEP §708.02 VIII - Special Examining Procedure for Certain New Applications-Accelerated Examination. In accordance with MPEP §708.02 VIII, each of the requirements therein has been met by the Applicants.

These requirements have been complied with as follows:

(A) this paper is a Petition to Make Special and the fee of \$130.00 set forth in 37 C.F.R. §1.17(h) is enclosed;

(B) all claims are directed to a single invention, or if the Office determines that all claims presented are not previously directed to a single invention, the Applicants will make an Election without traverse as a prerequisite to the grant of special status;

(C) a statement that a pre-examination search was made, listing the field of search by class and subclass, publication, chemical abstracts, foreign patents, etc., is enclosed herewith;

(D) one copy of each of the references deemed most closely related to the subject matter encompassed by the claims is enclosed herewith; and

(E) a detailed discussion of the references, which discussion points out, with the particularity required by 37 C.F.R. §1.111(b) and (c), how the claimed subject matter is patentable over the references, is enclosed herewith.

Based on the foregoing and the enclosed, the Petition to make the above-identified application special and to be advanced out of turn for examination is respectfully requested.

Should any questions arise from this Petition, the Examiner in charge of the above-identified application is requested to contact the Applicants' attorney

If any further fees are required in connection with the filing of this Amendment, please charge the same to our deposit account number 19-3935.

Respectfully submitted,

STAAS & HALSEY



Darleen J. Stockley
Registration No. 34,257

May 16, 2003
Date

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Docket No. 1419.1060

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re Application of

Yoshinobu KANEKO, et al.

Serial No.: 10/056,090

Filed: January 28, 2002

For: STEERING DEVICE FOR TOY AND RUNNING TOY

Confirmation No.: 9431

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Examiner: Unassigned

STATEMENT THAT A PRE-EXAMINATION SEARCH HAS BEEN MADE

Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

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In accordance with the enclosed Petition to Make Special, and as required by MPEP §708.02 VIII, a pre-examination search has been made with regard to the above-identified application. A copy of the pre-examination search is enclosed along with a detailed discussion of the references, which discussion points out, with the particularity required by 37 C.F.R. §1.111(b) and (c), how the claimed subject matter is patentable over the references. The following is a list of the field of search as required by MPEP §708.02 VIII(C).

Class 446 Amusement Devices: Toys

Subclass 454 - remotely controlled
456 - by radio signal
457 - including intrinsic motive power means for propulsion
460 - steering vehicle
465 - wheeled vehicle
466 - wheels vertically movable relative to chassis
468 - having means permitting turning of wheel for steering
471 - demountable

A manual search at the U.S. Patent and Trademark Office and a computer database search were conducted.

If there are any additional questions or comments regarding this search, the Examiner is respectfully requested to contact the Applicants' attorney regarding the same.

Respectfully submitted,
STAAS & HALSEY



Darleen J. Stockley
Registration No. 34,257

May 16, 2003
Date

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Washington, D.C. 20001
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Examiner: Unassigned

For: STEERING DEVICE FOR TOY AND RUNNING TOY

PRE-EXAMINATION SEARCH REPORT IN ACCORDANCE WITH MPEP
\$708.02 VIII(E)

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RESULTS OF PRE-EXAMINATION SEARCH

SUMMARY OF PRESENT APPLICATION AS CLAIMED IN INDEPENDENT CLAIMS

Claims 1, 5, 6, and 10 are independent claims.

Independent claim 1 and independent claim 5 recites a steering device for a toy.

Independent claims 6 and 10 recite a running toy.

More specifically, independent claim 1 recites a steering device for a toy, including right and left turning members for turning right and left steering wheels in clockwise and counterclockwise directions around each predetermined shaft; and a connecting member for connecting the right and left turning members with each other and for forming a turning pair with each turning member; wherein the right and left turning members are turned around each predetermined shaft by shaking the connecting member in right and left directions so as to change each direction of the steering wheels; one of a coil and a magnetic body is provided on the connecting member, the other of the coil and the magnetic body is fixed to a fixing portion,

and the coil and the magnetic body come close to and go away from each other by shaking the connecting member; and the connecting member takes at least two steering positions by controlling a current to be carried to the coil with a coil current carrying unit.

Independent claim 5 recites a steering device for toy, comprising: right and left turning members for turning right and left steering wheels in clockwise and counterclockwise directions around each predetermined vertical shaft; a connecting member for connecting the right and left turning members with each other and for forming a turning pair with each turning member; an electromagnetic force applying member for applying an electromagnetic force for shaking the connecting member in right and left direction; and a current carrying control unit for controlling an operation of the electromagnetic force applying member.

Independent claim 6 recites a running toy comprising: a steering device for toy, comprising: right and left turning members for turning right and left steering wheels in clockwise and counterclockwise directions around each predetermined shaft; and a connecting member for connecting the right and left turning members with each other and for forming a turning pair with each turning member; wherein the right and left turning members are turned around each predetermined shaft by shaking the connecting member in right and left directions so as to change each direction of the steering wheels; one of a coil and a magnetic body is provided on the connecting member, the other of the coil and the magnetic body is fixed to a fixing portion, and the coil and the magnetic body come close to and go away from each other by shaking the connecting member; and the connecting member takes at least two steering positions by controlling a current to be carried to the coil with a coil current carrying control unit.

Independent claim 10 recites a running toy comprising: a steering device comprising: right and left turning members for turning right and left steering wheels in clockwise and counterclockwise directions around each predetermined vertical shaft; a connecting member for connecting the right and left turning members with each other and for forming a turning pair with each turning member; an electromagnetic force applying member for applying an electromagnetic force for shaking the connecting member in right and left direction; and a current carrying control unit for controlling a current to be carried to the electromagnetic force applying member, so that the connecting member takes at least two steering positions; and a suspension device for pressing the right and left turning members which are movable in upper

and lower directions in a predetermined range, so that the right and left steering wheels are in contact with a ground.

The search was directed to amusement devices that include toys. More specifically, the search was directed to amusement devices that are toys that are remotely controlled, controlled by a radio signal, toys that include intrinsic motive power means for propulsion, steering vehicles, wheeled vehicles, toys having wheels vertically movable relative to the chassis, toys having means permitting turning of a wheel for steering, and demountable toys. In the search, references were looked for which teach toy platforms which have a steering device. The present invention provides a novel, non-complex and inexpensive steering structure of a toy. In a specific embodiment, FIGs. 8-9 illustrate a steering device according to the present invention. As shown in FIGs. 8-9, right and left knuckle arms (turning members) 21 and 21 on which right and left front wheel shafts 21a and 21a are provided, respectively, and a tie rod (connecting member) 22 connectst the right and left knuckle arms 21 and 21 with each other.

DETAILED DISCUSSION OF REFERENCES FOUND AS A RESULT OF THE PRE-
EXAMINATION SEARCH

Sudo, U.S. Patent No. 4,034,504

Sudo '504 discloses a direction-changing device for remotely controlled toys. Column 1 line 46- column 2, line 9, states, "According to the present invention, there is provided a direction changing device for moving toys which comprises in combination: a base plate, both end parts of which are bent upright, a wheel shaft or axle having wheels at both ends thereof, which passes through and is held by said upright end parts of said base plate in a rotatable manner, an engaging disc provided at the inside surface thereof with a plurality of recessed portions, and fixed concentrically in one of said wheels so that said disc may not be rotated in idle, while the other wheel is made freely rotatable, an operating rod arranged in parallel with said wheel shaft in a laterally slidable manner through said upright end parts of said base plate so that one of the end parts thereof may be properly engaged with any one of said recessed portions in said engaging disc, when said operating rod is caused to move laterally, an electromagnet mounted on one part of said base plate, and a movable iron piece, one end of which is fixed on said other end of said operating rod, and the other end of which is oscillatably fitted in the vicinity of said electromagnet so as to cause the operating rod to shift sidewise, when it is attracted to and contacted with the iron core of said electromagnet, said base plate being oscillatably fitted on the body of said moving toy through a pivot pin to enable said toy to change its moving direction on the pivot of the wheel, the rotation of which has been hindered by the operating rod engaged at its one tip end with said recessed part of said engaging disc provided in one of the wheels, when said movable iron piece contacts the iron core of said electromagnet by a control signal emitted from the outside."

Thus, Sudo '504 teaches using an operating rod that is caused to move laterally, an electromagnet mounted on one part of said base plate, and a movable iron piece, one end of which is fixed on said other end of said operating rod, and the other end of which is oscillatably fitted in the vicinity of said electromagnet so as to cause the operating rod to shift sidewise, when it is attracted to and contacted with the iron core of said electromagnet, said base plate being oscillatably fitted on the body of said moving toy through a pivot pin to enable said toy to change its moving direction on the pivot of the wheel, the rotation of which has been hindered by the operating rod engaged at its one tip end with said recessed part of said engaging disc

provided in one of the wheels, when said movable iron piece contacts the iron core of said electromagnet by a control signal emitted from the outside.

However, Sudo '504 fails to teach a steering device for a toy, comprising right and left turning members to turn right and left steering wheels; a connecting member to connect and turn the right and left turning members to take at least two steering positions in correspondence with coil current from a coil current carrying unit; an air core coil and a magnetic body having substantially same diameters, one of the air core coil and the magnetic body on the connecting member and the other fixed to a fixing portion, to use coil current to move the connecting member in right and left directions as the coil and magnetic body approach/depart from each other; and a torsion spring to hold the connecting member in neutral when no coil current is applied, as is taught by the present invention.

Jones et al., U.S. Patent No. 4,163,341

Jones et al. '341 discloses "Miniature vehicles operable on a slotless track have their front wheels disposed on a tie bar assembly mounting a permanent magnet. The permanent magnet is disposed to be attracted to either the right or left pole piece of a solenoid. First and second operator applied steering voltages activate a Zener diode to switch current through the solenoid to effect right or left steering and lane changing by the vehicles (see Abstract)."

However, Jones et al. '341 fails to teach a steering device for a toy, comprising right and left turning members to turn right and left steering wheels; a connecting member to connect and turn the right and left turning members to take at least two steering positions in correspondence with coil current from a coil current carrying unit; an air core coil and a magnetic body having substantially same diameters, one of the air core coil and the magnetic body on the connecting member and the other fixed to a fixing portion, to use coil current to move the connecting member in right and left directions as the coil and magnetic body approach/depart from each other; and a torsion spring to hold the connecting member in neutral when no coil current is applied, as is taught by the present invention.

Ishimoto, U.S. Pat. No. 4,471,566

Ishimoto '566 discloses a steering device for a toy car. A transverse steering plate connects the steerable front wheels, and a controlling element disposed at right angles to and in engagement with the steering plate is provided with two side-by side permanent magnets displaying opposite poles. An electromagnet is provided on the chassis and is polarized depending on the direction of the supplied current. The permanent magnets on the controlling element are simultaneously attracted to and repelled by the electromagnet, causing the controlling element to move left or right depending on which of the magnets is attracted and which is repelled by the electromagnet. The movement of the controlling element causes movement of the steering plate, thereby causing the wheels to turn. The steering device is also provided with supporting rods connected by a spring which act to re-center the steering upon removal of the current supplied to the electromagnet.

However, Ishimoto '566 fails to teach a steering device for a toy, comprising right and left turning members to turn right and left steering wheels; a connecting member to connect and turn the right and left turning members to take at least two steering positions in correspondence with coil current from a coil current carrying unit; an air core coil and a magnetic body having substantially same diameters, one of the air core coil and the magnetic body on the connecting member and the other fixed to a fixing portion, to use coil current to move the connecting member in right and left directions as the coil and magnetic body approach/depart from each other; and a torsion spring to hold the connecting member in neutral when no coil current is applied.

Ishimoto, U.S. Pat. No. 4,571,213

Ishimoto '213 discloses see figure 1a. See also Column 2 lines 8-21 which state, "A principal object of the invention is to provide a direction-converting device for a toy car, which comprises an electromagnet having an exciting iron core with its opposite sides being energizable to different polarities directed to the same direction, and a magnet having opposite end faces with different polarities, said electromagnet being arranged oppositely to said magnet on a car base, one core portion of said electromagnet at its free end having a width equal to or larger than a width of the opposed end of said magnet, said electromagnet or said magnet being fixed to one end of a controlling element which in turn is arranged at a middle portion of a steering element swingably secured to the car base."

However, Ishimoto '213 fails to teach a steering device for a toy, comprising right and left turning members to turn right and left steering wheels; a connecting member to connect and turn the right and left turning members to take at least two steering positions in correspondence with coil current from a coil current carrying unit; an air core coil and a magnetic body having substantially same diameters, one of the air core coil and the magnetic body on the connecting member and the other fixed to a fixing portion, to use coil current to move the connecting member in right and left directions as the coil and magnetic body approach/depart from each other; and a torsion spring to hold the connecting member in neutral when no coil current is applied.

Suto, U.S. Pat. No. 4,816,795

Suto '795 discloses a directional control device for a movable toy with a simple structure so that there is no need for any spring or gear mechanisms. See column 1 line 54 to column 2 line 13 which state, "In order to achieve the foregoing objects, the present invention provides a directional control device for use in a movable toy which comprises a cylindrical magnet, a yoke of a magnetic material which is disposed within the cylindrical magnet and provided with a electromagnetic coil, a control unit for selectively applying one of two kinds of electric currents opposite in polarity to the coil wound on the yoke, and steering arms attached to wheels of the movable toy, wherein the yoke is rotatably mounted in the cylindrical magnet and connected with the steering arms. When no electric current is applied to the electromagnetic coil wound on the yoke, the yoke disposed in the cylindrical magnet is held in its steady state, thereby to permit the rectilinear movement of the movable toy. The application of an electric current of one polarity to the electromagnetic coil causes the yoke to be magnetized to generate magnetic attraction force and repulsion force between the yoke and the cylindrical magnet, thereby to rotate yoke in one direction. Consequently, the rotational motion of the yoke is transmitted to the steering arm, thereby to change the direction of the movable toy in motion. When an electric current of the opposite polarity is applied to the electromagnetic coil, the yoke is electromagnetically rotated in the opposite direction because the magnetic poles of the yoke are reversed, thereby to direct the wheels of the movable toy to the opposite direction."

However, Suto '795 fails to teach a steering device for a toy, comprising right and left turning members to turn right and left steering wheels; a connecting member to connect and turn the right and left turning members to take at least two steering positions in correspondence with coil current from a coil current carrying unit; an air core coil and a magnetic body having substantially same diameters, one of the air core coil and the magnetic body on the connecting member and the other fixed to a fixing portion, to use coil current to move the connecting member in right and left directions as the coil and magnetic body approach/depart from each other; and a torsion spring to hold the connecting member in neutral when no coil current is applied.

Suzuki et al., U.S. Pat. No. 4,881,917

Suzuki et al. '917 discloses a remote control car with steerable front wheels. The steering mechanism includes a steering linkage which connects the wheels, and a guide member connected at right angles to the steering linkage. A coil is provided on one end of the guide member, and oppositely poled magnets are provided on the chassis. The coil is attracted to one or other of the magnets depending on the direction of the current supplied to the coil, causing the guide member to pivot thereby moving the steering linkage from side to side, which in turn, moves the wheels. Steering levers connected by a spring act on the "free" end of the guide member to re-center the steering when the current supplied to the coil ceases.

The present invention does not teach using oppositely poled magnets. In addition, Suzuki et al. '917 fails to teach a steering device for a toy, comprising right and left turning members to turn right and left steering wheels; a connecting member to connect and turn the right and left turning members to take at least two steering positions in correspondence with coil current from a coil current carrying unit; an air core coil and a magnetic body having substantially same diameters, one of the air core coil and the magnetic body on the connecting member and the other fixed to a fixing portion, to use coil current to move the connecting member in right and left directions as the coil and magnetic body approach/depart from each other; and a torsion spring to hold the connecting member in neutral when no coil current is applied.

Hamilton, U.S. Pat. No. 4,882,942

Hamilton, '942 discloses an attachment for use in conjunction with radio control transmitters, especially for use with model cars, which has a steering wheel and a fork-shaped lever extending therefrom. The lever is adapted to fit over the directional control stick of the transmitter, whereby the rotary motion created by turning the steering wheel translates into the rectilinear motion which actuates the control stick.

However, Hamilton '942 fails to teach a steering device for a toy, comprising right and left turning members to turn right and left steering wheels; a connecting member to connect and turn the right and left turning members to take at least two steering positions in correspondence with coil current from a coil current carrying unit; an air core coil and a magnetic body having substantially same diameters, one of the air core coil and the magnetic body on the connecting member and the other fixed to a fixing portion, to use coil current to move the connecting member in right and left directions as the coil and magnetic body approach/depart from each other; and a torsion spring to hold the connecting member in neutral when no coil current is applied.

Ishimoto, U.S. Pat. No. 4,898,562

Ishimoto '562 discloses a direction-converting device for a remote-controlled toy wherein a rotor shaft is supported between opposite contact faces of coil bobbins of an equally divided electromagnetic coil, said each bobbin accommodating a rotor magnet rotatably in a hollow inside and being wound in parallel with the rotor shaft in multiple turns with coils to form an electromagnetic coil assembly, and said rotor shaft at its one end communicating through a crank with a controlling element for shifting the direction so as to allow the electromagnetic coil to control the magnetic polarity of the rotor magnet by means of a remote control system.

However, Ishimoto '562 fails to teach a steering device for a toy, comprising right and left turning members to turn right and left steering wheels; a connecting member to connect and turn the right and left turning members to take at least two steering positions in correspondence with coil current from a coil current carrying unit; an air core coil and a magnetic body having substantially same diameters, one of the air core coil and the magnetic body on the connecting member and the other fixed to a fixing portion, to use coil current to move the connecting member in right and left directions as the coil and magnetic body approach/depart from each other; and a torsion spring to hold the connecting member in neutral when no coil current is applied.

Miles, U.S. Patent No. 5,338,247

Miles '247 discloses a servomotor connected to the tie rod in order to control the steering of the wheels.

However, Miles '247 fails to teach a steering device for a toy, comprising right and left turning members to turn right and left steering wheels; a connecting member to connect and turn the right and left turning members to take at least two steering positions in correspondence with coil current from a coil current carrying unit; an air core coil and a magnetic body having substantially same diameters, one of the air core coil and the magnetic body on the connecting member and the other fixed to a fixing portion, to use coil current to move the connecting member in right and left directions as the coil and magnetic body approach/depart from each other; and a torsion spring to hold the connecting member in neutral when no coil current is applied.

Siu, U.S. Patent No. 5,775,972

Siu '972 discloses "a toy vehicle having a rigid chassis, a steering control mechanism, and first and second wheels which are controllable by the steering control mechanism to steer a vehicle. A cam and step arrangement selectively redistributes the effective weight acting on first and second wheels so as to increase the relative effective weight on the one of the first and second wheels on the side of the vehicle to which the vehicle is desired to turn (see Abstract)."

However, Siu '972 fails to teach a steering device for a toy, comprising right and left turning members to turn right and left steering wheels; a connecting member to connect and turn the right and left turning members to take at least two steering positions in correspondence with coil current from a coil current carrying unit; an air core coil and a magnetic body having substantially same diameters, one of the air core coil and the magnetic body on the connecting member and the other fixed to a fixing portion, to use coil current to move the connecting member in right and left directions as the coil and magnetic body approach/depart from each other; and a torsion spring to hold the connecting member in neutral when no coil current is applied.

Chiu, U.S. Patent No. 5,851,134

Chiu '972 discloses a steering mechanism for a model vehicle including an electromagnetic coil wound around the wheel shaft of one of the wheels of the toy. Magnets are

located adjacent to the coil. Current is applied to the coil to cause the wheel shaft to rotate either towards one or other pole of the permanent magnets. See figures 1 and 2.

However, Chiu '134 fails to teach a steering device for a toy, comprising right and left turning members to turn right and left steering wheels; a connecting member to connect and turn the right and left turning members to take at least two steering positions in correspondence with coil current from a coil current carrying unit; an air core coil and a magnetic body having substantially same diameters, one of the air core coil and the magnetic body on the connecting member and the other fixed to a fixing portion, to use coil current to move the connecting member in right and left directions as the coil and magnetic body approach/depart from each other; and a torsion spring to hold the connecting member in neutral when no coil current is applied.

Tsang, U.S. Patent No. 6,350,173

Tsang '173 discloses a steering mechanism for toy cars. In particular, this steering mechanism is compact in size and part and is adaptable for use with toy cars of very small sizes. Additionally, this mechanism can be installed at a variety of positions on the toy. Column 2 lines 14-30 state, "The steering mechanism comprises a steering module including a coil having a first end and a second end with a central axis extending between the first and second ends thereof, and a slide bar disposed adjacent the first end of the coil and mounted for movement along a first substantially linear axis generally perpendicular to the central axis of the coil. The slide bar has a first end operatively connected to the first wheel and a second end operatively connected to the second wheel whereby movement of the slide bar along the first substantially linear axis results in a steering action on the first and second wheels. In addition, first and second magnets are mounted on the slide bar and are moveable therewith along the first substantially linear axis. The first and second magnets each include a north pole and a south pole, with the north pole of the first magnet facing the first end of the coil and the south pole of the second magnet facing the first end of the coil."

However, Tsang '173 fails to teach a steering device for a toy, comprising right and left turning members to turn right and left steering wheels; a connecting member to connect and turn the right and left turning members to take at least two steering positions in correspondence with coil current from a coil current carrying unit; an air core coil and a magnetic body having substantially same diameters, one of the air core coil and the magnetic body on the connecting member and the other fixed to a fixing portion, to use coil current to move the connecting member in right and left directions as the coil and magnetic body approach/depart from each other; and a torsion spring to hold the connecting member in neutral when no coil current is applied.

Kaneko et al., U.S. Patent No. 2002/0094752 A1

This is the published application for the invention searched.

Tsang, U.S. Patent No. 2002/0123296 A1

Tsang, 2002/0123296 A1, discloses an actuating bar 56 that "is positioned on top of the rails 42 between the right angle member 40 and the central portion 44. The actuating bar 56, together with the steering module 14, to be later described, form the steering mechanism 12 of the invention. As indicated by the arrows in FIG. 4, the actuating bar 56 is slidably disposed on the chassis 18 for sliding movement to the left and to the right along a generally linear axis. The actuating bar 56 includes tabs 58 that project from the sides of the chassis 18, with each tab 58 including a hole 59 therein to receive the respective pin 36 on the spindle arm 34, as best seen in FIG. 1. Thus, as the actuating bar 56 moves to the right and the left, the movement is transmitted through the spindle arms 34 to the spindle 28 thereby causing the wheels 30 to steer to the right and the left" (See page 3, paragraph 37). Tsang, 2002/0123296 A1, also discloses "steering module 14 that causes the actuating bar 56 to move to the right and left. The steering module 14 is positioned between a pair of tabs 60 projecting upward from the actuating bar 56 whereby movement of a portion of the steering module 14 to the right and to the left, shown by the arrows in FIG. 1, is transmitted to the actuating bar 56. As mentioned above, the steering module 14 and the actuating bar 56 form the steering mechanism 12 of the toy vehicle" (see FIG. 1 and page 3, paragraph 38).

However, Tsang, 2002/0123296 A1, fails to teach a steering device for a toy, comprising right and left turning members to turn right and left steering wheels; a connecting member to connect and turn the right and left turning members to take at least two steering positions in correspondence with coil current from a coil current carrying unit; an air core coil and a magnetic body having substantially same diameters, one of the air core coil and the magnetic body on the connecting member and the other fixed to a fixing portion, to use coil current to move the connecting member in right and left directions as the coil and magnetic body approach/depart from each other; and a torsion spring to hold the connecting member in neutral when no coil current is applied.

Ming, GB 2,201,549

Ming, GB 2,201,549, discloses an "actuating mechanism for a remote controlled device, for example a radio-controlled toy car, boat or aeroplane includes a movably mounted magnet (4) and a fixed electromagnet (7). In a preferred form the movable magnet (4) is a permanent magnet mounted on a pivotable lever with one pole positioned between the two opposite poles of the electro-magnet. The electromagnet is energisable with reversible polarity whereby the lever (3) can pivot in two opposed directions and, by means of a mechanical linkage (11, 13-15) transmit movement for example to a pair of steering wheels (12) of a toy vehicle. The electro-magnet is energized in response to radio signals from a control transmitter" (see Abstract).

Ming, GB 2,201,549, discloses an electromagnetic actuator for steering mechanisms of toys. "It can be seen from Figure 1 that the pivoting movement of the lever 3 causes a reciprocal movement of the tie bar 11 which in turn pivots the wheels 12, via the pivot arms 15, to the left or to the right according to the direction of movement of the lever. The lever is actuated by means of a U-shaped electromagnet 7 with reversible poles 16-17" (see page 3, lines 10-16).

However, Ming , GB 2,201,549, fails to teach a steering device for a toy, comprising right and left turning members to turn right and left steering wheels; a connecting member to connect and turn the right and left turning members to take at least two steering positions in correspondence with coil current from a coil current carrying unit; an air core coil and a magnetic body having substantially same diameters, one of the air core coil and the magnetic body on the connecting member and the other fixed to a fixing portion, to use coil current to move the connecting member in right and left directions as the coil and magnetic body approach/depart from each other; and a torsion spring to hold the connecting member in neutral when no coil current is applied.

Suimon, GB 2,112,655

Suimon, GB 2,112,655, discloses a steering mechanism for a toy vehicle. Page 1 lines 77-90 state, "To this end, according to the invention there is provided a steering mechanism comprising a supporting housing rotatable to the left and right around the axis of a shaft 6, a pair of soft magnetic members movably disposed in the supporting housing, each soft magnetic member having a substantially U-shaped or similar form and provided at its suitable portion with a coil, and a tire shaft made of a magnetic material and consisting of two parts which are rotatably mounted in the supporting housing at such positions that they can magnetically attract two ends of the soft magnetic members."

However, Suimon, GB 2,112,655, fails to teach a steering device for a toy, comprising right and left turning members to turn right and left steering wheels; a connecting member to connect and turn the right and left turning members to take at least two steering positions in correspondence with coil current from a coil current carrying unit; an air core coil and a magnetic body having substantially same diameters, one of the air core coil and the magnetic body on the connecting member and the other fixed to a fixing portion, to use coil current to move the connecting member in right and left directions as the coil and magnetic body approach/depart from each other; and a torsion spring to hold the connecting member in neutral when no coil current is applied.

Ishimoto, EP 0 307 659

Ishimoto, EP 0 307 659, discloses a "slot car" having steerable front wheels. The wheels are connected by a steering rod provided with a permanent magnet, and the steering rod moves from side to side, depending on the direction of the current supplied to a coil.

However, Ishimoto, EP 0 307 659, fails to teach a steering device for a toy, comprising right and left turning members to turn right and left steering wheels; a connecting member to connect and turn the right and left turning members to take at least two steering positions in correspondence with coil current from a coil current carrying unit; an air core coil and a magnetic body having substantially same diameters, one of the air core coil and the magnetic body on the connecting member and the other fixed to a fixing portion, to use coil current to move the connecting member in right and left directions as the coil and magnetic body approach/depart from each other; and a torsion spring to hold the connecting member in neutral when no coil current is applied.

Tai-Cheng, U.S. Patent No. 4,743,214

Tai-Cheng '214 discloses a toy car having steerable front wheels. The steering mechanism comprises a shaft which connects the wheels, and a link rod attached to the shaft. The link rod is provided with electromagnets between which a permanent magnet is provided. The electromagnets are attracted to or repelled by the magnet depending on the direction of the current, with movement of the electromagnets causing the link rod and shaft to move thereby turning the wheels. The shaft is also provided with a spring which re-centers the steering upon removing the current supplied to the electromagnets.

However, Tai-Cheng '214 fails to teach a steering device for a toy, comprising right and left turning members to turn right and left steering wheels; a connecting member to connect and turn the right and left turning members to take at least two steering positions in correspondence with coil current from a coil current carrying unit; an air core coil and a magnetic body having substantially same diameters, one of the air core coil and the magnetic body on the connecting member and the other fixed to a fixing portion, to use coil current to move the connecting member in right and left directions as the coil and magnetic body approach/depart from each other; and a torsion spring to hold the connecting member in neutral when no coil current is applied.

Ishimoto, JP 3111077

Ishimoto, JP 3111077, discloses a radio controlled toy car in which the steerable front wheels are connected by a steering rod provided with a permanent magnet. An electromagnet comprising a coil and two yokes, the polarity of which depend on the direction of the current supplied, is provided on the chassis, and the steering rod moves left and right depending on

which yoke the permanent magnet is attracted to, thereby turning the wheels. The steering mechanism is also provided with self-centering means.

However, Ishimoto, JP 3111077, fails to teach a steering device for a toy, comprising right and left turning members to turn right and left steering wheels; a connecting member to connect and turn the right and left turning members to take at least two steering positions in correspondence with coil current from a coil current carrying unit; an air core coil and a magnetic body having substantially same diameters, one of the air core coil and the magnetic body on the connecting member and the other fixed to a fixing portion, to use coil current to move the connecting member in right and left directions as the coil and magnetic body approach/depart from each other; and a torsion spring to hold the connecting member in neutral when no coil current is applied.

Lesney, GB 1095490

Lesney, GB 1095490 discloses a toy car having steerable front wheels comprising left and right steering members connected by a connecting bar. A resilient strip provided with a forked front end is supported centrally by a river, and bears on the steering members allowing them to move vertically within a predetermined range.

However, Lesney, GB 1095490, fails to teach a steering device for a toy, comprising right and left turning members to turn right and left steering wheels; a connecting member to connect and turn the right and left turning members to take at least two steering positions in correspondence with coil current from a coil current carrying unit; an air core coil and a magnetic body having substantially same diameters, one of the air core coil and the magnetic body on the connecting member and the other fixed to a fixing portion, to use coil current to move the connecting member in right and left directions as the coil and magnetic body approach/depart from each other; and a torsion spring to hold the connecting member in neutral when no coil current is applied.

Balthazor, U.S. Patent No. 3,083,499

Balthazor, '499 discloses a toy pickup with suspension that comprises a resilient member with arms which press on the axle allowing the wheels to move up and down over a predetermined range.

However, Balthazor '499 fails to teach a steering device for a toy, comprising right and left turning members to turn right and left steering wheels; a connecting member to connect and turn the right and left turning members to take at least two steering positions in correspondence with coil current from a coil current carrying unit; an air core coil and a magnetic body having substantially same diameters, one of the air core coil and the magnetic body on the connecting member and the other fixed to a fixing portion, to use coil current to move the connecting member in right and left directions as the coil and magnetic body approach/depart from each other; and a torsion spring to hold the connecting member in neutral when no coil current is applied.

Ito, JP 11-057235

Ito, JP 11-057235, discloses a small model automobile with a driving part M that is designed to be able to drive rear wheels 2 by means of a motor 6 and a worm mechanism which are mounted in a driving-part chassis 4. A steering part H is mounted on a steering-part chassis 5 and desitned to be capable of controlling the direction of front wheels 3 by rolling a front-wheel axle 10 by means of a rolling motor comprising a rotor 11, a coil 12, and a yoke 13.

However, Ito, JP 11-057235, fails to teach a steering device for a toy, comprising right and left turning members to turn right and left steering wheels; a connecting member to connect and turn the right and left turning members to take at least two steering positions in correspondence with coil current from a coil current carrying unit; an air core coil and a magnetic body having substantially same diameters, one of the air core coil and the magnetic body on the connecting member and the other fixed to a fixing portion, to use coil current to move the connecting member in right and left directions as the coil and magnetic body approach/depart from each other; and a torsion spring to hold the connecting member in neutral when no coil current is applied.

The following eight references were cited in a search report performed by the patent office in Great Britain on a corresponding application filed by applicants. Copies of the eight references have already been submitted to the United States Patent Office together with an Information Disclosure Statement which was submitted to the United States Patent Office on October 18, 2002. The eight references include: USPNs 4,471,566; 4,881,917; 3,083,499; 4,743,214; GB 2,201,549 A; JP 03-111077; EP 0 307 659 A2; and GB 1,095,490.

Thus, none of the prior art references found in the pre-examination search disclose or suggest the various features recited in the various independent claims of the present application discussed above.

If there are any additional questions or comments regarding this search, the Examiner is respectfully requested to contact the Applicants' attorney regarding the same.

Respectfully submitted,
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